

Removal Action Work Plan High Street Outfall and 40th Avenue Storm Sewer System

Vasquez Boulevard/Interstate 70 Site, Operable Unit #2

Prepared for:

City and County of Denver Environmental Quality Division 200 West 14th Ave, Suite 310 Denver, Colorado 80204

Prepared by:

Engineering Management Support, Inc. 7220 W. Jefferson Ave., Suite 406 Lakewood, Colorado 80235

June 19, 2015

TABLE OF CONTENTS

1	INT	FRODUCTION	1	
	1.1 1.2 1.3	BACKGROUND PROJECT ORGANIZATION PLAN ORGANIZATION	1	
2	SIT	E CHARACTERIZATION	4	
	2.1 2.2 2.3	WASTE MATERIAL GROUNDWATER SOIL GAS	.4 .5	
3	SCO	OPE OF REMOVAL ACTION		
	3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 3.10 3.11 3.12 3.13	DESIGN INVESTIGATION. GENERAL LAYOUT. MOBILIZATION PLAN. SITE PREPARATION. EXCAVATION OF SOLIDS. SOLIDS TREATMENT PRIOR TO DISPOSAL. SOLIDS DISPOSAL. GROUNDWATER MANAGEMENT. STORMWATER MANAGEMENT. DUST CONTROL MEASURES. PERSONNEL AND EQUIPMENT MONITORING AND DECONTAMINATION. 1 WORKER HEALTH AND SAFETY. 1 PROCUREMENT STRATEGY. 1	.6 7 .8 .8 .9 .9 .9 .9 .9 10	
4	PRO	OJECT SCHEDULE1	1	
5	5 PROJECT REPORTING			
	5.1 5.2	MONTHLY PROGRESS REPORTING		
6	RE	FERENCES1	4	

LIST OF FIGURES

- Figure 1 Conceptual Plan View of Stormwater Drainage System
- Figure 2 Conceptual Stormwater Channel Cross-section
- Figure 3 Organization Chart
- Figure 4 Waste Material Compounds of Concern
- Figure 5 Groundwater Compounds of Concern
- Figure 6 Removal Action Concept Plan
- Figure 7 Removal Action Master Schedule

LIST OF APPENDICES

Appendix A: Resumes of Key Project Staff

Appendix B: Summary of Known Environmental Conditions

Appendix C: Sampling and Analysis Plan (FSP, QAPP, and RMP)

Appendix D: Materials Management Plan

Appendix E: Health and Safety Plan

Appendix F: Monthly Report Template

LIST OF ACRONYMS

ACM Asbestos-Containing Material

AoC Agreement and Order on Consent

bgs Below ground surface

BMPs Best Management Practices

CCoD City and County of Denver

CCR Construction Completion Report

CDOT Colorado Department of Transportation

CDW Construction Dewatering

CERCLA Comprehensive Environmental Response, Compensation, and Liability

Act

COC Compound of Concern

EMSI Engineering Management Support, Inc.

EPA Environmental Protection Agency

ESD Explanation of Significant Difference

FSP Field Sampling Plan

HASP Health and Safety Plan

LEL Lower Explosive Limit

mg/kg milligram per kilogram

MMP Materials Management Plan

PAHs Polynuclear-aromatic Hydrocarbons

% v/v percent by volume

OU-2 Operable Unit #2

QAPP Quality Assurance Project Plan

RACS Regulated Asbestos-Contaminated Soil

RAWP Removal Action Work Plan

RD/RA/O&M Remedial Design/Remedial Action / Operations and Maintenance

RMP Records Management Plan

ROD Record of Decision

RPM Remedial Project Manager

FINAL

RTD Regional Transportation District

SAP Sampling and Analysis Plan

SoW Statement of Work

SVOCs Semi-volatile Organic Compounds

TCRA Time-Critical Removal Action

TSDF Treatment, Storage, and Disposal Facility

VOCs Volatile Organic Compounds

1 INTRODUCTION

This Removal Action Work Plan (RAWP) was prepared on behalf of the City and County of Denver (Respondent) pursuant to Section II.4 of the Statement of Work (SOW) attached to the Administrative Settlement Agreement and Order on Consent (AOC) for Removal Action in a Proceeding Under Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622 regarding the Vasquez Boulevard/Interstate 70 (VB/I70) Site Operable Unit 2 (OU2).

1.1 Background

Work under this Removal Action entails design and implementation of the "environmental components" of an open channel stormwater drainage feature to be constructed through a portion of Operable Unit 2 of the VB/I70 Superfund site. The open channel stormwater drainage feature is part of a larger project that is intended to reduce flooding in the Montclair Drainage Basin area and address stormwater management needs associated with projects being developed by Regional Transportation District (RTD), Colorado Department of Transportation (CDOT), and Respondent. A conceptual plan and cross-section of the segment of the stormwater channel of interest, which lies on property owned by the Respondent, are illustrated on Figures 1 and 2, respectively.

The "environmental components" to be addressed by this Removal Action consist of: 1) management and handling of waste material encountered during construction of the open channel stormwater drainage feature; 2) management and, if necessary treatment and/or disposal, of dewatering liquid during construction; and 3) design and construction of an impermeable barrier system to prevent any contaminants remaining within the boundaries of the stormwater feature from adversely impacting stormwater retained within and conveyed by the open channel system, as well as prevent stormwater infiltration into contaminated media remaining within the feature.

The purpose of this RAWP is to describe 1) management and disposal solid and liquid wastes that will be encountered or generated during design and construction, 2) investigative activities that will support design of the impermeable barrier system, 3) a general approach to barrier system construction, and 4) health and safety measures to be implemented during design and construction.

1.2 Project Organization

A project Organization Chart is shown on Figure 3. Overall, the project is managed by its project coordinator, Ms. Lisa Farrell, from the City and County of Denver. Ms. Farrell represents the interests of the Respondent and is responsible to ensure that all aspects of the work described in the SOW are implemented in accordance with the AOC. She has

direct reporting responsibility to the EPA and other entities involved with the barrier system design and construction.

The Respondent has retained Engineering Management Support, Inc. (EMSI) as the Managing Contractor. All aspects of the work to be performed by the Respondent pursuant to the AOC will be under the direction and supervision of EMSI. Accordingly, EMSI will direct and supervise all aspects of the Removal Action work. To facilitate this, the Project Coordinator has authorized EMSI to communicate directly with EPA or other regulatory entities on her behalf.

As a vice-president and principal engineer of EMSI, Mr. Timothy C. Shangraw, PE., will serve as Project Manager. He has BS and MS degrees in Civil Engineering, is a registered professional engineer in Colorado, and has 32 years of professional experience, most of which has been in hazardous waste management. Since 1984, Mr. Shangraw has been involved with CERCLA activities at Colorado Superfund Sites including, but not limited to, managing design and construction Removal Actions and RD/RA/O&M of the sitewide remedy for the Lowry Landfill Superfund Site. His resume is included in Appendix A.

Key members of the project team reporting directly to Mr. Shangraw include the QA Official and Health and Safety Officer, the Technical Director, and Technical Discipline Leads. Professionals serving those roles are listed on Figure 3. Their resumes are also included in Appendix A.

Key contractors retained by EMSI consist of CTL Thompson (Geotechnical Engineer and Testing): R.K Frobel and Associates (Barrier Design Engineer); Test America (Analytical Laboratory); Aquifer Technology (Certified Asbestos Building Inspector); Aerobiology (Asbestos Analyses); Site Services Drilling, LLC (Drilling services); Waste Management of Colorado, Inc. (disposal of non-hazardous solid waste and asbestos-containing material); Clean Harbors (treatment and disposal of hazardous and industrial wastes); Foresight West Surveying, Inc. (surveying); and CADD Services (drafting and GIS services). From time to time, additional contractors may be procured to support the work. The technical work provided by these contractors is supervised by the Technical Discipline Leads, who report to the Project Manager.

The project team includes personnel with requisite certifications. The Project Manager or Health and Safety Officer will inspect certifications prior to team members working the project. Documentation of certifications will be provided in the Subcontractor files for professional certifications, and in the Project Files for OSHA certifications. Training will be provided as necessary to maintain current certifications.

Over time, the named key team individuals or contractors may change. In such an event, the Project Manager, with approval from the Project Coordinator, will replace the Team member with an equally-qualified individual or company. Should the Project Manager, QA Official, or Technical Director need to be replaced, the Project Coordinator will notify EPA and present a new candidate for review and approval by EPA.

This Removal Action is a time-critical removal action. All of the resources identified above will be assigned to the project, as necessary, to meet the critical path schedule presented on Figure 7.

1.3 Plan Organization

This RAWP contains six sections, including this introduction. A description of the Site characteristics is presented in Section 2. The Removal Action approach, including a design investigation, general layout of construction features anticipated during implementation, environmental controls, traffic patterns, and health and safety measures are presented in Section 3. A project schedule is presented in Section 4, project reporting procedures are discussed in Section 5, and references are listed in Section 6.

The text and figures are followed by six appendices that contain:

Appendix A: Resumes of Key Project Staff

Appendix B: Summary of Known Environmental Conditions

Appendix C: Sampling and Analysis Plan

Appendix D: Materials Management Plan (draft final)

Appendix E: Health and Safety Plan Appendix F: Monthly Report Template

2 SITE CHARACTERIZATION

2.1 Waste Material

Waste material beneath and west of the Denver Coliseum parking lot have been characterized by EMSI, 2009; Brown and Caldwell, 2010; and CTL Thompson, 2011. Summary results from their investigations are presented in Appendix B.

Where the barrier system study area crosses the Coliseum parking lot (Figure 1), waste material are present from approximately two feet below the ground surface (bgs) to as much as 20 feet bgs. Additional waste material may be present in the Globeville Landing Park area located west of the parking lot, but its areal extent, thickness and depth are not known at this time.

Compounds of potential concern in waste material consist of volatile organic compounds (VOCs), polynuclear-aromatic hydrocarbons (PAHs), arsenic, lead, and asbestos. Concentrations of VOCs, PAHs and metals in the material within and adjacent to the channel alignment are posted on Figure 4. Based on available information these concentrations are not characteristically hazardous, nor TCLP toxic.

Asbestos was detected in material collected from HS-02 (Figure 3) at a concentration of 0.5 percent of the total sample analyzed (CTL Thompson, 2011). This may be considered a trace amount, but its presence raises concern that asbestos may be randomly present in the material. If encountered, the ACM may need to be handled separately.

Additional Site characterization information is necessary to support design of the barrier system, and to manage handling and disposal of material that will be disturbed. Specific objectives and details of the additional data collection are discussed in Section 3.1 of this RAWP and in Appendix C.

2.2 Groundwater

Groundwater quality along the barrier system alignment has also been characterized by EMSI, 2009; Brown and Caldwell, 2010; and CTL Thompson, 2011. Summary results from their investigations are also presented in Appendix B.

In the vicinity of the barrier system, groundwater depths were measured in 2010 (Brown and Caldwell, 2010) and 2011 (CTL-Thompson, 2011). Their single-point readings indicate depths of approximately 10.7 feet bgs at HS-02; 11.5 feet bgs at CTL MW-4; 12.6 feet bgs at CTL MW-5; 13.7 feet bgs at HS-08; 23.5 feet bgs at MW-1; 23.8 feet bgs at HS-01; and 23.9 feet bgs at CTL MW-6. These depths will likely vary over time, but the single-point data provide a general indication of the depth to groundwater for planning purposes.

As shown on Figure 5 compounds of potential concern in groundwater consist of volatile organic compounds (VOCs), arsenic, cadmium, copper, lead, manganese, and zinc. If these concentrations are representative of waters that will be encountered during barrier system construction, treatment will likely be required before the water can be released to a receiving surface water body such the South Platte River or nearby Sand Creek. Constituents that may require removal are discussed in a draft final Materials Management Plan (MMP), presented in Appendix D.

Similar to waste material, additional groundwater characterization information is necessary to support barrier system design, and to manage handling, treatment, and discharge of the groundwater encountered during construction. Objectives and details of the additional data collection are presented in in Section 3.1 of this RAWP and in Appendix C.

2.3 Soil Gas

Soil gas monitoring was conducted during the advancement of borings HS-01, HS-02, HS-08, located on Figure 5 (Brown and Caldwell, 2010). Methane concentrations ranged from 0.5 percent by volume in air (% v/v) at HS-01, to 9.8 % v/v at HS-08, to 43.4 % v/v at HS-02. Additional measurements upstream (to the southeast) of the Coliseum parking lot detected methane concentrations up to 56.7 % v/v (see Appendix B, Soil Gas). In addition, well-head gas at the ground surface was measured during advancement of the CTL-MW-series well borings. Lower Explosive Limits (LELs) of 100% were recorded at many of the well-heads (CTL-Thompson, 2011). For reference, an LEL reading of 100% equates to a methane content of approximately 5% v/v.

3 SCOPE OF REMOVAL ACTION

3.1 Design Investigation

The first phase of the Removal Action will be a Design Investigation to better characterize subsurface conditions through which the barrier system will be constructed. Specific objectives of the Design Investigation consist of:

- 1) Determine the areal extent and depth of waste material along the footprint of the proposed alignment;
- 2) Sufficiently characterize the waste material for offsite disposal. Non-hazardous, solid waste disposal at the Denver Arapahoe Disposal Site (DADS) will require a) demonstration that the material will pass RCRA characteristic screens for ignitability, corrosivity, reactivity (cyanide and sulfide screen), oxidizers, and paint filter test, and TCLP toxicity for VOCs, PAHs, lead, and arsenic. In addition, samples that might visually appear to contain asbestos will be assessed for friable asbestos;
- 3) Determine the potentiometric surface of groundwater beneath and adjacent to the barrier system;
- 4) Characterize the quality of groundwater that may be encountered during construction to determine the need for and type of treatment required during construction; and
- 5) Assess the methane and total VOC concentrations of soil gas that may be encountered during excavation and materials handling.

Characterization and testing procedures designed to address these Design Investigation objectives are described in a Sampling and Analysis Plan (SAP), presented in (Appendix C). Results from the Design Investigation will be presented in a Data Summary Report that will support design of the barrier system and finalization of the draft final MMP (Appendix D).

3.2 General Layout

A conceptual layout of the Removal Action is illustrated on Figure 6. Solids excavated from the drainage channel will be staged along the north side of the excavation. Drainage from the excavated material will flow back to the open excavation via a swale excavated around the north, east, and west sides of the stockpile, and via direct southward flow into the open excavation. From the open excavation, liquids will be pumped and treated, as discussed below.

Solids will be visually screened prior to placement in the stockpile for evidence of hazardous material and ACM. To the extent that either is identified, the suspect material will be staged in the same general area, but separate from the non-hazardous and non-ACM material. Testing of the potentially hazardous and/or friable ACM will be performed in accordance with the MMP.

Transport of non-hazardous solids, hazardous waste, and ACM will be performed by licensed haulers under appropriate DOT manifests. As shown on Figure 6, transport vehicles will enter the Site via McFarland Drive, turn around in the Coliseum parking lot, be loaded from the north side of the Solids Staging Area, then depart via the eastbound lane of McFarland Drive. During loading of the trucks, a Site inspector will monitor the solids for evidence of free liquids and if observed, he/she will direct the material to be placed back on the stockpile for further drainage. Similarly, a Site inspector will monitor the stockpiled solids for emissions of VOCs, methane, odor, and fugitive dust. Threshold VOC and methane levels are discussed in the Health and Safety Plan presented in Appendix E. Malodors and visible fugitive dust will be monitored by the Site inspector monitoring the work. If VOC or methane threshold levels are exceeded, the material is excessively malodorous, or visible fugitive dust is observed at the Site boundary, appropriate mitigation measures will be performed, such as spraying the material with a fine mist of water, or slowing down excavation or loading operations. These and other mitigative measures will be detailed in the Removal Action design.

Before each loaded vehicle leaves the Site, it will be inspected for evidence of free liquids leaking from the vehicle, loose material not contained within the truck trailer, and a properly positioned screen over the top of the loaded trailer. With the Site inspector's approval, the loaded transport truck will be allowed to depart the Site.

Liquids from the channel excavation will likely be generated from dewatering operations, gravity-draining of stockpiled solids, direct precipitation onto the open excavation and stockpiled soils, and decontamination activities. In accordance with the MMP any or all of these liquids may require treatment. Dewatering and water treatment details will be developed during Removal Action design. For planning purposes, treatment and pumping equipment will be located south the of the drainage channel as shown on Figure 6. Vehicle access to and from the treatment facilities will be via Arkins Court, as shown on the Figure 6.

Support areas that will accommodate a field trailer, equipment storage, and staff parking will be located along the northern boundary of the Coliseum parking lot, as shown on Figure 6. Security will be provided by fencing that surrounds working areas.

3.3 Mobilization Plan

A mobilization plan will be developed by contractors who will be implementing the Removal Action. For planning purposes, contractors will be directed to set their trailers, heavy equipment, and construction materials in the Field Trailer and Equipment Storage areas, respectively, as shown on Figure 6.

3.4 Site Preparation

A temporary on-Site field office will be established for on-Site management of Removal Action implementation. The field office will be equipped with potable bottled water, fire extinguisher, safety door, and fire and smoke detectors. Electric service will be provided from a Coliseum power supply designated by the Respondent. Distribution boxes and circuit wiring will be provided by the Respondent to meet the required power needs. All circuits throughout the Site will be protected either by a ground fault interrupter or an approved grounding system.

Lighting will be provided for all work areas when night work is required, or natural light is inadequate to perform the work safely. Work areas will be lighted to not less than the minimum illumination intensities listed in OSHA Standard 29 CFR 1910.120.

The Respondent will provide access to an adequate water supply for construction water. Non-potable water outlets will be clearly identified so as not to be used for drinking or cooking purposes. Water for suppression of VOCs, odor, or dust, and for soil moisture will be supplied by the Respondent at locations indicated during Removal Action design. Potable water such as bottled drinking water for use by Contractor's employees will be provided by the Contractor.

Contractors will provide temporary toilet facilities, which will be the chemical type, insofar as possible, to minimize water requirements. Contractors will be responsible for servicing and maintaining these facilities.

All vehicular traffic control will conform to the traffic patterns illustrated on Figure 6 and be in conformance with Site Rules (discussed below) to promote safe and efficient operations. Parking areas will be designated by the On-Site Manager. Site Rules are as follows:

- Maximum speed limit for all vehicles/equipment on-Site is 15 miles per hour.
- Vehicle and pedestrian traffic must yield to heavy equipment at all times.
- Contractor's vehicles must have orange survey flagging wrapped around interior rear view mirror to distinguish them as Superfund Site activity-related vehicle traffic.
- No vehicle will be allowed to idle for more than 5 minutes (Title II Revised Municipal Code, Chapter 4, Article IV, Sec 4-43) unless it is required to perform a specific construction function.

Equipment storage will be in the Equipment Storage Area shown on Figure 6. Storage will be in accordance with the individual Contractor's Work Plans, as approved by the Respondent.

3.5 Excavation of Solids

An excavation plan will be developed as part of the Removal Action design.

3.6 Solids Treatment Prior to Disposal

Visual screening, segregation, and additional testing (if needed) of solids are addressed in the MMP.

3.7 Solids Disposal

Solids disposal options are addressed in the MMP.

3.8 Groundwater Management

If groundwater, which includes perched water within the excavated material, is encountered the excavation will require dewatering. Two management scenarios are considered in the MMP. The first is treatment followed by release to the South Platte River or Sand Creek under Colorado's Construction Dewatering (CDW) general permit or Remediation permit. The second is disposal of the water offsite as an industrial or hazardous waste in a licensed RCRA treatment, storage, or disposal facility (TSDF).

At completion of the Removal Action, a permanent groundwater monitoring well will be installed at a location that meets data quality objectives that will be determined in consultation with EPA.

3.9 Stormwater Management

A stormwater control plan will be developed as part of Removal Action design. It will include measures used to divert stormwater around the open excavation, solids storage area, and water treatment areas. Diversions may consist of diversion terraces or interceptor channels that route stormwater to the South Platte River with minimal erosion impact. To the extent that the diverted stormwater may contain suspended solids contributed from Removal Action activities, the diverted water will be treated using Best Management Practices (BMPs) prior to release to the South Platte River. Such BMPs may consist of sediment barriers such as hay/straw bales or silt fencing composed of geotextile.

Stormwater that contacts waste material will require collection and possible treatment prior to release. Collection mechanisms, treatment, and release will be developed as part of the Removal Action design. Release of the water to the South Platte River or Sand Creek will require a discharge permit, as discussed in the MMP.

3.10 Dust Control Measures

Dust control measures will be developed as part of the Removal Action design.

3.11 Personnel and Equipment Monitoring and Decontamination

Contractors and subcontractors performing work at the Site will decontaminate all tools, heavy equipment, and other equipment prior to arrival on-Site. Tools and heavy equipment that are used on-Site that contact waste material or contaminated groundwater will be pressure-washed until visually-clean, prior to departing from the Site. Trucks transporting waste material or contaminated groundwater from the Site will not require pre-Site decontamination, nor departure decontamination unless the Site inspector observes visual contamination on trucks entering the Site, or Site materials on vehicle tires or transport equipment exiting the Site.

Decontamination of personnel will occur as necessary prior to leaving the Site. Visibly-stained personal protective equipment (PPE) will be collected and disposed as a non-hazardous solid waste unless there is reason to believe the PPE is hazardous or is contaminated with ACM.

3.12 Worker Health and Safety

Hazardous levels of VOCs and explosive gases may be present during drilling, excavation, materials handling, or when working near an open excavation or stockpiled material. Applicable regulations include, but may not be limited to, the confined space standard (Part 1926.21(b)(6)(i) and (ii) in Subpart C); gases, vapors, fumes, dusts and mists (Part 1926.55 in Part 1926 Subpart E); fire protection and prevention (Part 1926 Subpart F); and trenching and excavation (Part 1926 Subpart P). Site-specific threshold values, mitigation measures, PPE, and recommended personnel field procedures are presented in the Project Health and Safety Plan (HASP), which is presented in Appendix E.

At a minimum, contractors and subcontractors will abide by a HASP for their employees. A contractor or subcontractor may choose to apply the Project HASP as a guide to develop its own HASP, or may choose to adopt the Project HASP in full. In either case, the Project HASP will be considered the primary HASP for all project-related activities. If another HASP is provided by a contractor or subcontractor, it will be considered an attachment to the Project HASP. All contractors and subcontractors will, at a minimum, follow all provisions of the Project HASP and/or applicable OSHA guidelines; whichever is more stringent or appropriate. In addition, all organizations performing oversight will be responsible for their own employee's health and safety and for providing and verifying that each person present at the Site has the appropriate health and safety training.

3.13 Procurement Strategy

A procurement strategy will be developed as part of Removal Action design.

4 PROJECT SCHEDULE

A Master Schedule is presented on Figure 7.

Project plans consisting of this RAWP, the SAP (including the Field Sampling Plan, Quality Assurance Project Plan, and Records Management Plan), MMP, and HASP are scheduled to be prepared during the months of May and June, and finalized in early July, 2015. The Design Investigation field work is scheduled for July. Laboratory analyses and geotechnical testing will occur during July and August followed by preparation of a draft Data Summary Report and Preliminary Removal Action Design. The latter two documents are scheduled to be completed in mid-September, 2015. Finalization of the Data Summary Report, MMP, and Design documents will occur between October and December, 2015.

Procurement of material suppliers and contractors is scheduled between December, 2015 and late February, 2016. Contracts will be awarded in early March 2016, followed by mobilization, setup, and application for a Construction Dewatering and/or Remediation Permits between March and April 2016. Removal Action construction is scheduled to commence in May and be completed in November, 2016.

5 PROJECT REPORTING

5.1 Monthly Progress Reporting

Monthly progress reports will contain most of the information specified in Superfund Removal Procedures, Removal Response Reporting: POLREP and OSC Reports (EPA, 1994). The monthly report will include the following sections:

Section 1 - Heading

Section 2 - Background,

Section 3 - Site Information,

Section 4 - Removal Information, and

Section 5 - Disposition of Wastes.

Section 1 will include date of report, Site name, author of report, recipient of report, and number of report.

Section 2 will the Site number, response authority, CERCLIS number, NPL status, Action Memorandum date, actual start date, demobilization date, and completion date.

Section 3 will include incident category (e.g., time critical, fund-lead, etc.), description of the Site, description of the threat, and removal Site investigation results.

Section 4 will include a description of contamination, cleanup standards, actions to date, and planned actions.

Section 5 will include a description of the waste, treatment process required prior to disposal, volume of treated waste, temporary storage, and final disposition of the waste.

The template included as Appendix F will be followed for the monthly reports. Monthly reports will be submitted to EPA no later than 30 calendar days after the end of the reporting period.

5.2 Construction Completion Report

At completion of the Removal Action, a Construction Completion Report (CCR) will be prepared. It will include the following 10 sections:

Section 1 - Introduction: Include a brief description of the location, size, environmental setting, and operational history of the Site. Describe the operations and waste management practices that contributed to contamination of the Site. Describe the major findings and results of Site investigation activities.

Section 2 - Operable Unit Background: Summarize requirements specified in the ROD, ESD, and TCRA Memorandum for OU2. Include information on the cleanup goals, institutional controls, monitoring requirements, and other parameters applicable to the design, construction, operation, and performance of the removal action.

Section 3 - Construction Activities: Provide a step-by-step summary description of the activities undertaken to construct and implement the remedy e.g., mobilization and Site preparatory work; construction of the treatment system; associated Site work, such as fencing and surface water collection and control; system operation and monitoring; and sampling activities).

Section 4 - Chronology of Events: Include significant milestones and dates, such as, design submittal and approval; ROD amendments or ESDs; mobilization and construction of the remedy; significant operational events such as treatment system/application start-up, monitoring and sampling events, system modifications, operational down time, variances or non-compliance situations, and final shut-down or cessation of operations; final sampling and confirmation-of- performance results; required inspections; demobilization; and completion or startup of post- construction operation & maintenance activities.

Section 5 - Performance Standards and Construction Quality Control: Describe the overall performance of the technology in terms of comparison to cleanup goals. For treatment remedies, identify the quantity of material treated, the strategy used for collecting and analyzing samples, and the overall results from the sampling and analysis effort.

Section 6 - Final Inspection and Certifications: Report the results of the various inspections to include the pre-Final inspection, and identify noted deficiencies. If implemented, summarize details of the institutional controls (e.g., the type of institutional control, who will maintain the control, who will enforce the control).

Section 7 - Summary of Project Costs: Provide the actual final costs and applicable year for the project. If actual costs are not available, provide estimated costs.

Section 8 - Observations and Lessons Learned: Provide Site-specific observations and lessons learned from the project, highlighting successes and problems encountered and how resolved.

Section 9 - Operable Unit Contact Information: Provide contact information (names, addresses, phone numbers, and contract/reference data) for the major design and remediation contractors, EPA oversight contractors, and the respective RPM and project managers for EPA, the State, and the Respondent, as applicable.

6 REFERENCES

CTL Thompson, Inc., 2011. Limited Phase II Environmental Site Assessment, 40th Street Outfall, South Platte River to Blake Street, Denver, CO, prepared for WHPacific, Inc. May 10, 2011.

Brown and Caldwell, 2010. High Street Limited Subsurface Investigation, prepared for City and County of Denver. May 28, 2010.

Engineering Management Support, Inc., (EMSI), 2009. Vasquez Boulevard, I-70 Superfund Site Operable Unit 2 Remedial Investigation, prepared for City and County of Denver. December 16, 2009.

EPA, 1994 (June). Superfund Removal Procedures, Removal Response Reporting: POL.REP and OSC Reports. Office of Solid Waste and Emergency Response (OSWER) Directive 9360-3-03, United States Environmental Protection Agency, Washington, D.C. 20460

FIGURES

Appendix A

Resumes

Appendix B

Summary of Known Environmental Conditions

- Waste Material
- Groundwater
- Soil Gas

Appendix C

Sampling and Analysis Plan

- Field Sampling Plan
- Quality Assurance Project Plan
- Records Management Plan

Appendix D Materials Management Plan

Appendix E Health and Safety Plan

Appendix F Monthly Report Template